

Appendix A

Example Best Management Practices Plan for a Construction Project in Kentucky

STARSHADER APARTMENTS CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMP) PLAN

SITE DESCRIPTION			
Project Name and Location: (Latitude, Longitude, or Address)	Starshader Apartments 21 Broadview Avenue Center City, KY 40000	Owner Name and Address:	Pine Grove Development LLC 11 Main Street Center City, KY 40000
Site Manager and BMP Plan Contact Person:	Mark Smith, General Contractor, 404-111-1111 DBA Smith Homebuilders	Project Start and End Dates:	Start: January 1, 2007 End: December 31, 2008
Description: (Existing Site Conditions, Purpose, and Types of Soil Disturbing Activities)			
<p>The existing site is grassed pasture with rolling slopes <5%, some cedars, and no mature trees in the area to be developed. Soils are silty clays with good drainage. No streams are on the property. Rocky Creek is about 450 ft downgrade. No threatened or endangered species were found on the property. This project will consist of three low-rise, attached apartment buildings with adjacent parking facilities. Soil disturbing activities will include: clearing and grubbing; installing a stabilized construction entrance, installing perimeter silt fence and other erosion and sediment controls; grading; excavation for the sedimentation pond, storm sewer, utilities, and building foundations; construction of roadside drainage swales, roads, and parking areas; and preparation for final seeding and landscaping.</p>			
Runoff Coefficient:	Current Runoff Coefficient = 0.15; Final Runoff Coefficient = 0.45		
Site Area:	The site is approximately 11.0 acres of which 9.8 acres will be disturbed by construction activities.		
Sequence of Major Activities			
Construction Activity	Schedule Consideration		
Construction access - entrance to site, construction routes, areas designated for equipment parking	This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary vegetation.		
Sediment traps and barriers – basins, traps, sediment fences, outlet protection	After construction site is accessed, principal basins will be installed, with the addition of more traps and barriers as needed during grading.		
Runoff control - diversions, perimeter dikes, outlet protection	Key practices will be installed after the installation of principal sediment traps and before land grading. Additional runoff control measures may be installed during grading.		
Runoff conveyance system - storm drains, channels, inlet and outlet protection, slope drains	There are no streams on site. Principal conveyance systems will be installed with runoff control measures. The remainder of the systems may be installed after grading.		
Land clearing and grading—site preparation (cutting, filling, and grading, sediment traps, barriers, diversions, drains, surface roughening)	Major clearing and grading will begin after installation of principal sediment and key runoff-control measures, and additional control measures will be installed as grading continues. Borrow and disposal areas will be cleared as needed. Trees and buffer areas will be marked for preservation.		
Surface stabilization—temporary and permanent seeding, mulching, sodding, riprap	Stabilization will begin within 14 days on areas of the site where construction has permanently or temporarily (for 21 days or more) ceased.		
Building construction—buildings, utilities, paving	During construction, erosion and sedimentation control measures will be installed as needed, such as construction entrances and silt fence at back of curb and/or property line. Gravel areas will be installed for building material storage.		
Landscaping and final stabilization—topsoiling, trees and shrubs, permanent seeding, mulching, sodding, riprap	This is the last construction phase. All open areas will be stabilized, including borrow and spoil areas. Temporary control structures will be removed and the area will be seeded and mulched.		

[illegible]

SITE DESCRIPTION (Continued)	
Name of Receiving Waters:	The entire site will drain into Rocky Creek, which is approximately 450 feet from the site.
TMDLs and Pollutants of Concern in Receiving Waters:	Rocky Creek is not listed on the Kentucky impaired waters (303d) list; there is no TMDL for Rocky Creek. No threatened and endangered species are present in Rocky Creek downstream from the project discharge.
Potential Sources of Pollutants:	Sediment from land clearing and grading; concrete washout water; paint wash water; oil/fuel/grease from equipment; sanitary waste; trash/debris.
CONTROLS	
Erosion and Sediment Control	
Stabilization Practices	
<p>Temporary Stabilization – Top soil stockpiles and disturbed portions of the site where construction activity stops for at least 21 days will be stabilized with temporary seed or straw mulch no later than 14 days from the last construction activity in that area. The temporary seed shall be rye grass applied at a rate of 120 pounds per acre. Lime and fertilizer will be applied prior to seeding if necessary to establish the rye. After seeding, each area shall be mulched with at least 2,000 pounds per acre of blown or hand-scattered straw. The straw will be netted down or crimped into place by a disk harrow with the blades set straight. Areas of the site which are to be paved will be temporarily stabilized by applying geotextile and stone sub-base until bituminous pavement can be applied.</p> <p>Permanent Stabilization – Disturbed portions of the site where construction activities are completed will be stabilized with permanent seed no later than 14 days after completion of construction in that area. Seed and mulch will be applied via hydroseeding/mulching or as described below. The permanent seed mix will consist of 80 lbs/acre tall fescue, and 40 lbs/acre kobe lespedeza. Lime and fertilizer will be applied prior to seeding if needed. After seeding, each area will be mulched with 4,000 pounds per acre of straw. The straw mulch will be netted down or crimped into place by a disk harrow with blades set straight. Ditches will be triple-seeded.</p>	
Structural Practices	
<p>Earthen Berm – will be constructed along the uphill perimeter (north) of the site. This berm will divert run-on around the construction site. Another berm on the east side will collect runoff from the disturbed area and direct the runoff to the sediment basin. Berms will be seeded and mulched after construction. Erosion control blankets will be used on top of seed in berm ditches with slopes of 5-10 percent. Turf reinforcement mats will be used in berm ditches with slopes exceeding 10 percent.</p> <p>Sediment Basin – will be constructed at the common drainage location on the south side of the construction site. The basin will be formed by constructing an embankment across an existing gully and excavating a storage pond with a volume of 36, 000 cubic feet (1,333 cubic yards). The basin will drain through a corrugated metal riser and outlet pipe to a riprap outlet apron. The riser will have ½ inch holes 3-6 inches apart, with no large holes or slots in the lower two-thirds of the riser. Sediment will be removed before the basin is half full. Also, once construction activities are nearly complete, the accumulated sediment will be removed from the basin. The sediment basin and surrounding area will be seeded and mulched with blown straw immediately after construction. Basin will be modified with an inlet rock berm during construction.</p>	

CONTROLS (Continued)	
Site Runoff Management	
<p>Storm water drainage will be provided mostly by grassed swales, with some curb and gutter, storm sewer and catch basins in a portion of the developed areas. Runoff will be diverted onto undisturbed vegetated areas and revegetated areas where possible for infiltration. Landscaped areas with no buildings or roads will be brought to grade and planted/seeded/mulched within 14 days. Two acres of the site, along existing drainage areas and some slopes, will be flagged off-limits to equipment and remain in its current natural state. When construction is complete the entire site will drain to a wet detention basin. The wet detention basin will be in the location of the temporary sediment basin. The areas on the sides of the basin will be seeded and mulched after modification. The wet detention pond is designed with a permanent pool volume of 36, 000 cubic feet (1,333 cubic yards). This is equivalent to one inch of runoff for the drainage area. It is expected that this wet detention pond design will remove 80 percent removal of total suspended solids in the site runoff. The pond has been designed by a professional engineer to keep peak flow rates from the two and ten year/24 hour storms at pre-development (i.e., unpaved) rates. The outlet of the detention basin will be stabilized by a riprap apron. The inlet will be modified during construction by installation of a 3 ft high rock berm around the inlet to increase detention time and sediment removal. The berm will be removed after the entire site is stabilized.</p>	
OTHER CONTROLS	
Waste Disposal:	
Waste Materials	<p>All waste materials that may leach pollutants (paint and paint containers, caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) will be collected and stored in a covered metal dumpster rented from the ABC Waste Management Company, which is a licensed solid waste management company in Center City. The dumpster will meet all local Center City and any State solid waste management regulations. Construction debris and other wastes that do not leach pollutants will be deposited in a covered or open-topped dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to the Center City Landfill. No construction waste materials will be buried onsite. All personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer and Mr. Doe, the individual who manages the day-to-day site operations, will be responsible for seeing that these procedures are followed.</p>
Hazardous Waste	<p>All waste materials will be disposed of in the manner specified by local or State regulation or by the manufacturer. Site personnel will be instructed in these practices and Mark Smith, the individual who manages day-to-day site operations, will be responsible for seeing that these practices are followed.</p>
Sanitary Waste	<p>Portable toilets will be used on site for sanitary wastes. All sanitary waste will be collected from the portable units a minimum of three times per week by the TIDEE Company, a licensed Center City sanitary waste management contractor, as required by local regulation. Portable units will be placed away from storm drain inlets, ditches, creeks, and other water bodies.</p>
Offsite Vehicle Tracking:	
	<p>A stabilized #2 and larger rock construction exit with geotextile underliner will be installed to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be swept daily if necessary to remove any excess mud, dirt, or rock tracked from the site. The rock exit will be grubbed lightly as needed to clear (shake down) dry mud. Dump trucks hauling material from the construction site will be covered with a tarpaulin.</p>

TIMING OF CONTROLS/MEASURES

As indicated in the Sequence of Major Activities, the earthen diversion berm, silt fences / sediment barriers, stabilized construction entrance, and sediment basin will be constructed prior to clearing or grading of any other portions of the site. Sediment traps will be constructed as needed in areas where gullying occurs. Ditches will be built and seeded/mulched (or blanketed) after construction. Areas where construction activity temporarily ceases for more than 21 days will be stabilized with temporary seed and/or mulch within 14 days of the last disturbance. Once construction activity ceases permanently in an area, that area will be seeded and mulched within 14 days. Temporary controls in permanently stabilized areas, such as silt fences, sediment barriers, ditch checks, temporary sediment traps, etc., will be removed. Controls will remain in place until all vegetation is established and ditches are stable.

CERTIFICATION OF COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

The storm water pollution prevention plan reflects Kentucky Division of Water and Center City requirements for storm water management and erosion and sediment control, as established in Center City ordinance 5-188. To ensure compliance, this plan was prepared in accordance with the Kentucky BMP Planning and Technical Specifications Manual published by KY DOW and KY DOC and the Center City Stormwater Management Handbook, published by the Center City Department of Planning, Public Works Section. There are no other local, state, or federal permits (e.g., Clean Water Act Section 404 dredge/fill permit, Clean Water Act Section 401 Water Quality Certification, etc.) needed for this project.

MAINTENANCE/INSPECTION PROCEDURES

Erosion and Sediment Control Inspection and Maintenance Practices

Maintenance and inspection will be handled by Mark Smith of Smith Homebuilders, who has been trained on construction site BMPs at workshops sponsored by the KY DOW and KY DOC. Other workers on-site will be trained in BMP installation, maintenance, and good housekeeping by Mr. Smith. These are the inspection and maintenance practices that will be used to maintain erosion and sediment controls:

- All erosion prevention and sediment control measures will be inspected at least once each week and following any rain of one-half inch or more.
- Inspections will be conducted by Mark Smith, who has been trained by the KY DOW. Mr. Smith will train three people who will be responsible for assisting in the inspections and installing, maintaining, and repairing the controls on the site.
- Inspection reports will be written, signed, dated, and kept on file.
- Less than ½ of the site or 5 acres, whichever is less, will be cleared of vegetation at one time; areas at final grade will be seeded and mulched within 14 days.
- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported.
- Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- The sediment basin will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 30 percent of the design capacity and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.

MAINTENANCE/INSPECTION PROCEDURES (Continued)

It is expected that the following non-storm water discharges will occur from the site during the construction period:

- Water from water line flushings.
- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
- Uncontaminated groundwater and rain water (from dewatering during excavation).

All non-storm water discharges will be directed to the sediment basin or to a filter fence enclosure in a flat vegetated infiltration area or be filtered via another approved commercial product.

INVENTORY FOR POLLUTION PREVENTION PLAN

The materials or substances listed below are expected to be present onsite during construction:

- | | |
|-----------------------------|----------------------------|
| • Concrete | • Fertilizers |
| • Detergents | • Petroleum Based Products |
| • Paints (enamel and latex) | • Cleaning Solvents |
| • Metal Studs | • Wood |
| • Concrete | • Masonry Block |
| • Tar | • Roofing Shingles |

SPILL PREVENTION

Material Management Practices

The following material management practices, which will be used to reduce the risk of spills or other accidental exposure of materials and substances to exposure to the weather and/or runoff.

Good Housekeeping:

The following good housekeeping practices will be followed onsite during the construction project.

- An effort will be made to store only enough product required to do the job
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in their original containers with the original manufacturer's label
- Substances will not be mixed with one another unless recommended by the manufacturer
- Whenever possible, all of the product will be used up before disposing of the container
- Manufacturers' recommendations for proper use and disposal will be followed
- The site superintendent will inspect daily to ensure proper use and disposal of materials onsite.

Hazardous Products:

These practices will be used to reduce the risks associated with any and all hazardous materials.

- Products will be kept in original containers unless they are not resealable
- Original labels and material safety data sheets (MSDS) will be reviewed and retained
- If surplus product must be disposed of, manufacturers' or state/local recommended methods for proper disposal will be followed

SPILL PREVENTION (Continued)

The following product-specific practices will be followed onsite:

Petroleum Products:

All onsite vehicles will be fueled and maintained off-site, monitored for leaks, and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products onsite (oil, gas for tamp and pump) will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

Fertilizers:

If used, fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be covered with mulch or blankets or worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

Paints:

All containers will be tightly sealed and stored indoors or under roof when not being used. Excess paint or paint wash water will not be discharged to the drainage or storm sewer system but will be properly disposed of according to manufacturers' instructions or state and local regulations.

Concrete Truck Washout:

Concrete truck mixers and chutes will not be washed on pavement, near storm drain inlets, or within 75 feet of any ditch, stream, wetland, lake, or sinkhole. Where possible, excess concrete and wash water will be discharged to areas prepared for pouring new concrete, flat areas to be paved that are away from ditches or drainage system features, or other locations that will not drain off site. Where this approach is not possible, a shallow earthen wash basin will be excavated away from ditches to receive the wash water.

Spill Control Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include but not limited to brooms, dust pans, mops, rags, gloves, kitty litter, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate state/local agency.
- The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- Mark, Smith, the site superintendent responsible for the day-to-day site operations, will be the spill prevention and cleanup coordinator. He will designate at least three other people onsite to receive spill prevention/cleanup training and assist in cleanups. Their names will be posted in the material storage area and in the office trailer outside.

BMP PLAN FILES, UPDATES, AND AMENDMENTS

This BMP Plan and related documents (e.g., NOI, inspection reports, US ACE permits, etc.) will be kept on file at the construction site by Mark Smith, the Site Manager. The BMP Plan will be updated by the Owner and/or Site Manager to reflect any and all significant changes in site conditions, selection of BMPs, the presence of any unlisted potential pollutants on site, or changes in the Site Manager, contractor, subcontractors, or other key information. Updates and amendments will be made in writing within 7 days and will be appended to the original BMP Plan and available for review.

BEST MANAGEMENT PRACTICES (BMP) PLAN CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed: _____ Date: _____
 John R. Quality
 President
 Pine Grove Development LLC

CONTRACTOR'S CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System (KPDES) permit that authorizes the storm water discharges associated with the construction site activity identified as part of this certification.

Signature	For	Responsible for
Mark Smith, President Date: _____	Smith Homebuilders, Inc. 21 Elm Street Center City, KY 40000 (404)111-1111	General Contractor Site Manager BMP Plan Implementation BMP Plan Updates and Files
John Planter Vice President of Construction Date: _____	Green Grass, Inc. 4233 Center Road Outerville, KY 40001 (123) 823-5678	Temporary and Permanent Stabilization
Jim Kay, President Date: _____	Dirt Movers, Inc. 523 Lincoln Ave. Outerville, KY 40001 (123) 823-8921	Stabilized Construction Entrance, Earth Dikes, Sediment Basin

Kentucky BMP Plan • Construction Site Inspection Report

Company:	Site:	County:
Site Operator:		Inspection Date:
Receiving Water:	Total Site Area (acres):	# Disturbed Acres:
Inspector Name:	Inspector Qualifications:	
Inspection Type: Weekly or ½ Inch Rain	Days Since Last Rainfall _____	# Inches of Last Rainfall: _____

Field Inspection Observations

BMP Category	Compliance			Field Indicators for Compliance
	Poor	Fair	Good	
Project Operations				Notice of Intent (KPDES permit) and other local/state permits on file BMP Plan on site and available for review; project activities following BMP plan Weekly inspection and rain-event reports on BMPs available for review Diversions, silt checks/traps/basins, and silt fences/barriers installed prior to clearing Grading and clearing conducted in phases to minimize exposed soil areas No vegetation removal or operations in stream or sinkhole buffer area (25-50 ft min) Rock pad in place on all construction site exits leading to paved roads No sediment, mud, or rock on paved public roads in project area Dust control if needed when working in residential areas during dry conditions
Drainage Management				Upland runoff diverted around bare soil areas with vegetated/lined ditches/berms Drainage channels exiting the site are lined with grass/blanket/rock and stabilized Discharges from dewatering operations cleaned in silt fence enclosure or other filter No muddy runoff leaving site after rains up to 1½ inches
Erosion Protection				Exposed soil seeded/mulched after 2 weeks if no work is planned for the next 7 days Soils on steep slopes seeded/mulched/blanketed as needed to prevent rutting
Sediment Barriers				Silt fence, rock filter, or other sediment barrier below all bare soil areas on slopes Barrier installed across slope on the contour, trenched in, posts on downhill side Multiple sediment barriers at least 125 ft apart on unseeded slopes steeper than 4:1 J-hook interceptors along silt fence where heavy muddy flows run along fencing No visible undercutting or bypassing or blowout of sediment barrier Accumulated sediment is less than halfway to the top of sediment barrier
Slope Protection				Slopes tracked, disked, or conditioned after final grade is established Slopes seeded, mulched, or blanketed within 21 days, no unmanaged rills or gullyng Heavy downslope flows controlled by lined downrain channels or slope drain pipes No muddy runoff from slopes into streams, rivers, lakes, or wetlands
Inlet Protection				Inlet dam/device or filtration unit placed at all inlets receiving muddy flows No visible undercutting, bypassing, or blowout of inlet protection dam or device Accumulated sediment is less than halfway to the top of the inlet protection dam/device
Outlet Protection				High flow discharges have rock or other flow dissipaters of adequate sizing at outlet Culvert outlets show no visible signs of erosion/scour, bank failure, or collapse
Ditch and Channel Stabilization				No unmanaged channel bank erosion or bottom scouring visible within or below site Ditches with slopes more than 3% have check dams spaced as needed, if not grassed Ditch check dams tied in to banks, with center 4" lower than sides, and no bypassing Ditches with slopes of up to 5% are thickly seeded with grass (minimum requirement) Ditches 5% to 15% are lined with thick grass and erosion control blankets as needed Ditches 15% to 33% are lined with thick grass and matting or other approved product Ditches exceeding 33% are paved or lined with rock or other approved product

Sediment Traps and Basins	<p>Storage volume is at least 134 cubic yards for each acre of bare soil area drained</p> <p>Trap or basin is seeded/mulched and stabilized; no collapsing sidewalls or banks</p> <p>Outlet structure is stable and consists of rock-lined notched overflow or outlet riser</p> <p>Rock overflow is 6" lower in center to control overflow discharge</p> <p>Outlet riser pipe has concrete & rock base, ½ inch holes every 3" to 6", and trash rack</p> <p>Area near pipe outlet or overflow is stable, with no scour or erosion</p> <p>Sediment removed before trap or basin is halfway full; disposal is away from ditches</p>
Maintenance of EPSC Management Practices	<p>Sediment behind silt fence and other filters does not reach halfway to top</p> <p>Sediment traps and basins are less than half full of sediment</p> <p>Gullies repaired, silt fences and other controls inspected and repaired/replaced</p> <p>Written documentation of controls installed, inspection results, and repairs performed</p> <p>All controls removed and areas graded, seeded, and stabilized before leaving site</p>
Materials Storage, Handling, and Cleanup	<p>Materials that may leach pollutants stored under cover and out of the weather</p> <p>Fuel tanks located in protected area with double containment system</p> <p>Fuel and/or other spills cleaned up promptly; no evidence of unmanaged spills</p> <p>No evidence of paint, concrete, or other material washouts near drain inlets</p> <p>No storage of hazardous or toxic materials near ditches or water bodies</p>
Waste Disposal	<p>Trash, litter, and other debris in proper containers or properly managed</p> <p>No litter or trash scattered around on the construction site</p> <p>Provisions made for restroom facilities and/or other sanitary waste management</p> <p>Sanitary waste facilities clean and serviced according to schedule</p> <p>No disposal of any wastes into curb or other inlets, ditches, streams, or water bodies</p>

Inspection Notes and Key Observations

List of Stabilized Areas: Vegetation is Established; Ditches are Stabilized; No Exposed Soil
Other Notes or Observations:
Corrective Actions Taken and/or Proposed Revisions to BMP Plan:

I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System (KPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signature of Inspector: _____

Date: _____

Appendix B

Example Site Plan Drawings



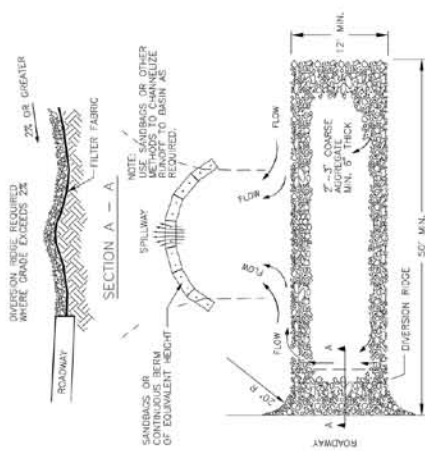
(NOTE: THE EROSION CONTROL MEASURES NOTED BELOW ARE MINIMUM AND DO NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY FOR COMPLIANCE WITH ANY AND ALL U.S. EPA AND / OR KENTUCKY DIVISION OF WATER REQUIREMENTS.)

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ENTRANCE NOTES:

[illegible]

BEST MANAGEMENT PLAN PLAN SHEET

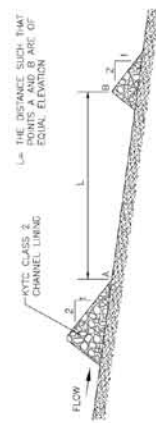


NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF FLOW OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE TOP OF SPILLWAY TO BE MAINTAINED AT A MINIMUM OF 12' MIN. ABOVE PUBLIC RIGHT-OF-WAY.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE DIRT.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH COARSE STONE THAT SPILLS INTO AN APPROPRIATE SEDIMENT TRAP OR SEDIMENT BASIN.

CONSTRUCTION ENTRANCE

NOT TO SCALE

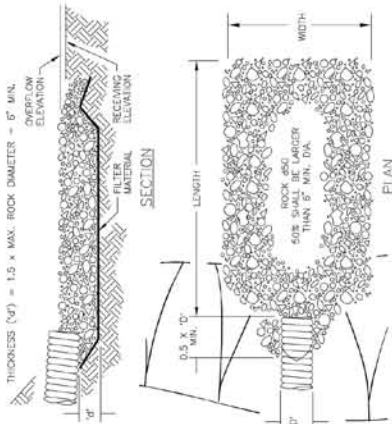


LONGITUDINAL SECTION SHOWING SPACING BETWEEN CHECK DAMS



CHECK DAM

NOT TO SCALE

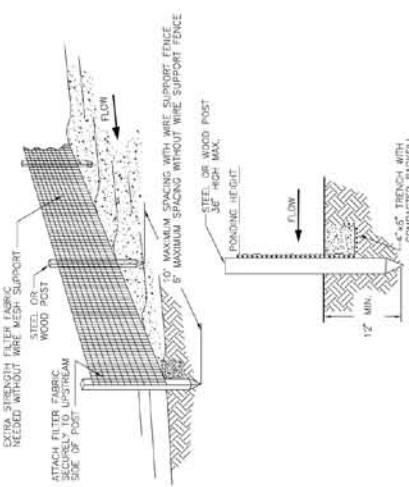


NOTES:

1. THE LENGTH AND WIDTH SHALL BE DETERMINED BY THE ENGINEER.
2. APRON SHALL BE SET AT A ZERO GRADE AND ALLOWED STRAIGHT.
3. FILTER MATERIAL SHALL BE FILTER FABRIC OR 6" THICK MINIMUM COARSE GRAVEL LAYER.

OUTLET PROTECTION ENERGY DISSIPATOR

NOT TO SCALE

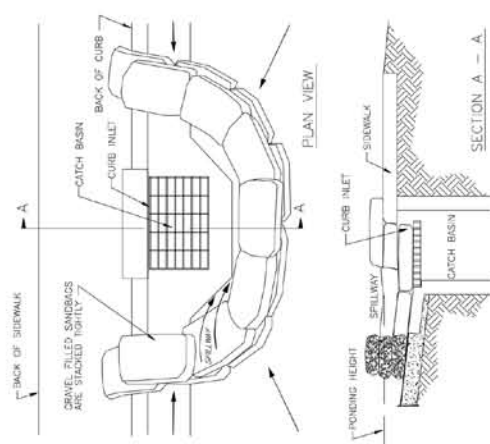


NOTES:

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE FLOODING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. IF MAXIMUM RECOMMENDED STORAGE HEIGHT IS EXCEEDED, SEDIMENT OFF-SITE AND CAN BE PERMANENTLY EXHAUSTED.

SILT FENCE INSTALLATION-TRENCH METHOD

NOT TO SCALE



CURB INLET SEDIMENT BARRIER (SANDBAGS)

NOT TO SCALE

NOTES:

1. PLACE CURB TYPE SEDIMENT BARRIERS ON GENTLY SLOPING STREET SEDIMENTS TO PREVENT FLOODING OF PUBLIC RIGHT-OF-WAY.
2. SANDBAGS OF EITHER RUBBER OR WOVEN GEOTEXTILE FABRIC ARE FILLED WITH GRAVEL LAYERED AND PACKED TIGHTLY.
3. LEAVE ONE SANDBAG GAP IN THE TOP ROW TO PROVIDE A SPILLWAY FOR OVERFLOW.
4. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REPAIRED FROM THE TRAVELLED WAY IMMEDIATELY.

CURB INLET SEDIMENT BARRIER (SANDBAGS)

NOT TO SCALE

BEST MANAGEMENT PLAN DETAIL SHEET

Appendix C

Site Runoff Calculations

DR 1006-1 General Information

The Universal Soil Loss Equation (USLE) has been used extensively as an acceptable method of computing sheet erosion from farmlands. Modifications have been made in the USLE for determining construction site erosion. The revisions are referred to as RUSLE and are accomplished mainly through adjustments of "urban" vegetation conditions ("C" factors) and the urban best management factors ("P" factors). Soil erosion from rills and gullies is not included in this equation. If gullies are present or a potential problem, further computations may be made to determine additional soil erosion. This is an "estimation" of sheet soil erosion and is not interchangeable with sediment delivery or sediment yield.

The rate of sheet erosion depends on several factors:

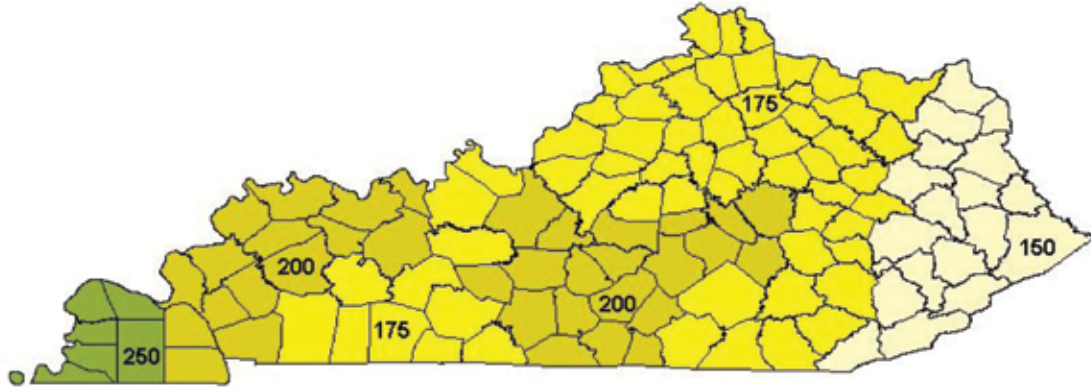
- Rainfall energy and intensity
- Soil erodibility
- Land slope and length of slope
- Condition of the soil surface and best management practices in use
- Surface cover involved, such as grass, woodlands, crops, pavement, or no cover at all

These factors are assigned quantitative values to be used for computing soil loss and are found in the following tables.

The Universal Soil Loss Equation equation is $A = R \times K \times (LS) \times C \times P$, where

- A = The computed annual soil loss expressed in tons per acre
- R = The rainfall factor is the number of erosion index units in a normal year's rain. The average annual erosive rainfall factors (R values) for Kentucky are shown in **Table 1006-1-A**.
- K = The soil erodibility factor for selected soils of Kentucky is shown in **Table 1006-1-B**. K is the erosion rate per unit of erosion index for a specific soil.
- LS = The slope length factor is the ratio of soil loss from a specific slope length to a 72.6-foot slope of the same soil on a 9 percent gradient. Refer to **Table 1006-1-C** for values of LS .
- C = The cropping management factor is the ratio of soil loss from a field with specified cropping management to that of the fallow condition on which the factor K is evaluated. Refer to **Table 1006-1-D** for crop management factors.
- P = The best management practice factor is the ratio of soil loss with certain conservation practices to that which results without such practices. Refer to **Table 1006-1-E** for best management practice factors. The annual soil loss in tons per acre may be reduced to cubic yards per acre by use of **Table 1006-1-F** and adjusted for the portion of the year that the soil is actually exposed to soil erosion by use of **Table 1006-1-G**.

Table 1006-1-A
RAINFALL FACTOR, R by COUNTY



Counties with 150 R Factor

Bell	Elliott	Johnson	Letcher	Morgan
Boyd	Floyd	Knott	Magoffin	Perry
Breathitt	Greenup	Lawrence	Martin	Pike
Carter	Harlan	Leslie		

Counties with 175 R Factor

Allen	Clay	Kenton	Nelson	Shelby
Anderson	Estill	Knox	Nicholas	Simpson
Bath	Fayette	Laurel	Ohio	Spencer
Boone	Fleming	Lee	Oldham	Todd
Bourbon	Franklin	Lewis	Owen	Trimble
Bracken	Gallatin	Logan	Owsley	Warren
Breckinridge	Grant	Mason	Pendleton	Washington
Bullitt	Grayson	McCreary	Powell	Wayne
Butler	Harrison	Meade	Pulaski	Whitley
Campbell	Henry	Menifee	Robertson	Wolfe
Carroll	Jackson	Mercer	Rowan	Woodford
Christian	Jefferson	Montgomery	Scott	
Clark	Jessamine	Muhlenberg		

Counties with 200 R Factor

Adair	Cumberland	Hart	Madison	Rockcastle
Barren	Daviess	Henderson	Marion	Russell
Boyle	Edmonson	Hopkins	Marshall	Taylor
Caldwell	Garrard	Larue	McLean	Trigg
Calloway	Green	Lincoln	Metcalfe	Union
Casey	Hancock	Livingston	Monroe	Webster
Clinton	Hardin	Lyon	Ohio	
Crittenden				

Counties with 250 R Factor

Ballard	Fulton	Graves	Hickman	McCracken
Carlisle				

Table 1006-1-B
ERODIBILITY (K FACTORS) AND TEXTURES OF B AND C HORIZONS
FOR SELECTED KENTUCKY SOIL SERIES

Soil Series	B Horizon		C Horizon	
	Tex.	K Value	Tex.	K Value
Armour	sicl	0.37	sicl	0.43
Ashton	sil	0.43	sil	0.43
Avonburg	sil	0.43	sic	0.32
Beasley	sic	0.28	c	0.28
Brandon	sicl	0.28	vgrsl	0.17
Brashear	sic	0.28	c	0.28
Braxton	sicl	0.28	sicl	0.28
Calloway	sic	0.43	sic	0.43
Crider	sicl	0.32	sic	0.28
Cynthiana	sic	0.28	rock	----
Donerail	sicl	0.28	c	0.28
Eden	flsic	0.28	vflsic	0.17
Elk	sicl	0.28	sicl	0.28
Fairmont	sic	0.28	rock	----
Faywood	sic	0.28	sic	0.28
Grenada	sicl	0.49	sil	0.64
Lakin	fsl	0.17	ls	0.17
Lanton	sic	0.43	c	0.32
Lax	sicl	0.43	grcl	0.32
Loradale	sic	0.28	c	0.28
Loring	sicl	0.49	sicl	0.43
Lowell	sic	0.28	c	0.28
Maury	sic	0.28	c	0.28
McAfee	sic	0.28	c	0.28
Memphis	sicl	0.49	sil	0.49
Mercer	sicl	0.43	c	0.28
Muskingum	sil	0.28	cnsil	0.17
Nicholson	sicl	0.43	c	0.37
Russellville	sicl	0.43	c	0.37
Shelbyville	sicl	0.28	sic	0.28
Wheeling	cl	0.24	fsl	0.24
Woolper	sic	0.28	c	0.28
Zanesville	sicl	0.28	l	0.28

(The K value may be increased or decreased as much as 20 percent to adjust for local soil series variations.) Abbreviations of Soil Textures are as follows:

c—clay
cl—clay loam
cnsil—channery silt loam
fsl—fine sandy loam
grsl—gravelly clay loam
ls—loamy sand

sic—silty clay
sicl—silty clay loam
sil—silt loam
vflsic—very flaggy silty clay
vgrsl—very gravelly sandy loam

Table 1006-1-C
Soil Loss, LS, Along a Slope

$$LS = (\lambda / 72.6)^m * (430 * x^2 + 30 * x + 0.43) / 6.613$$

Where λ = slope length (λ = horizontal length/cos θ or = fill height/sin θ)

θ = slope angle; $x = \sin \theta$

$m = 0.3$ for slope < 3%, 0.4 for slope = 4%, or 0.5 for slope > 5%

LS Based on Horizontal Length (feet)							
Slope H : V	10	20	30	40	60	80	100
50 : 1	0.100	0.123	0.139	0.152	0.172	0.187	0.200
40 : 1	0.121	0.149	0.168	0.183	0.207	0.226	0.241
30 : 1	0.159	0.196	0.221	0.241	0.272	0.297	0.317
25 : 1	0.193	0.238	0.269	0.293	0.331	0.361	0.386
20 : 1	0.205	0.271	0.319	0.358	0.421	0.472	0.516
10 : 1	0.432	0.610	0.748	0.863	1.057	1.221	1.365
8 : 1	0.607	0.858	1.051	1.213	1.486	1.716	1.918
6 : 1	0.960	1.357	1.662	1.919	2.351	2.714	3.035
4 : 1	1.880	2.659	3.257	3.761	4.606	5.318	5.946
LS Based on Fill Height (feet)							
Slope H : V	5	10	20	40	60	80	100
6 : 1	1.662	2.351	3.325	4.702	5.758	6.649	7.434
4 : 1	2.659	3.761	5.318	7.521	9.212	10.637	11.892
2 : 1	5.925	8.379	11.850	16.759	20.525	23.700	26.498
1 : 1	11.168	15.794	22.336	31.587	38.687	44.671	49.944

Table 1006-1-D ESTIMATED C FACTORS FOR PROTECTIVE GROUND COVER ON CONSTRUCTION SITES		
Type of Cover	Application Rate	C Factor
None (Fallow Ground)	-	1.0
Temporary Seeding (90% Stand):		
Ryegrass (Perennial Type)	-	0.05
Ryegrass (Annuals)		
Small Grain	-	0.05
Millet or Sudan Grass	-	0.05
Field Bromegrass	-	0.03
Permanent Seedings (90% Stand):	-	-
(Bluegrass, KY 31 Fescue, etc.)	-	0.01
Sod (Laid Immediately)	-	0.01
Mulches:		
Straw or Hay	2 Tons/acre	0.25
	4 Tons/acre	0.13
	6 Tons/acre	0.07
	10 Tons/acre	0.02
Wood Chips	30 Tons/acre	0.06
Wood Cellulose	9 Tons/acre	0.10
Fiberglass	2 Tons/acre	0.05
Asphalt Emulsion	40 Cubic Yards/acre	0.02
(Fiber matting, excelsior, gravel, and stone may also be used as protective ground cover with an estimated C factor of 0.02 to 0.10 depending upon the amount applied.)		
ESTIMATED C FACTORS FOR SURFACE CONDITIONS WITH NO COVER		
Type of Cover	C Factor	
Compact and smooth, scraped with bulldozer or scraper up and downhill	1.3	
Same condition, except raked with bulldozer root rake up and downhill	1.2	
Compact and smooth, scraped with bulldozer or scraper along the slope	1.2	
Same condition, except raked with bulldozer root rake along the slope	0.9	
Loose as a disked layer	1.0	
Rough irregular surface equipment tracks in all directions	0.9	
Loose with rough surface greater than 1 foot deep	0.8	
Loose with smooth surface greater than 1 foot deep	0.9	

**Table 1006-1-E
ESTIMATED BEST MANAGEMENT PRACTICE P FACTORS FOR
SEDIMENT BASINS AND SEDIMENT CONTROL SYSTEMS**

Situation	P Factor
Sediment basin – small, on site	
- Receiving sediment from 70% of the site	0.50
- Receiving sediment from 100% of the site	0.20
Sediment basin – large, off site	
- Downstream below construction site	0.15
System of diversions and waterways	
- Seeded, sodded, riprap as needed	0.45

**Table 1006-1-F
FACTORS FOR CONVERTING
TONS PER ACRE TO CUBIC YARDS PER ACRE**

Texture	Factor
Sands, loamy sands, sandy loams	0.70
Sandy clay loams, silt loams, loams, and silty clay loams	0.87
Clay loams, sandy clays, clay, and silty clays	1.02

**Table 1006-1-G
RAINFALL DISTRIBUTION TABLE**

Month	Western Half of Kentucky¹		Eastern Half of Kentucky¹	
	Per Month	Accumulative	Per Month	Accumulative
January	3	3	3	3
February	6	9	4	7
March	7	16	6	13
April	9	25	6	19
May	12	37	8	27
June	12	49	13	40
July	15	64	20	60
August	13	77	20	80
September	7	84	9	89
October	6	90	4	93
November	5	95	3	96
December	5	100	4	100
SUM	100		100	

¹ Division line is approximately a north/south line from Owenton to Albany.